

Oral Manifestations of HIV Infection: A Multimedia Atlas

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This program demonstrates an innovative project designed to provide physicians, nurses, dentists and dental auxiliaries with a computerized atlas of clinical images of oral manifestations of HIV infection.

Oral signs and symptoms are common and often present early in the clinical stage of the disease. Awareness of the appearance of lesions that may be caused by HIV infection is essential if patients are to be referred promptly for diagnosis and treatment.

Two hundred fifty images were digitized into formats that could be read on both the Apple Macintosh and Microsoft Windows based machines. The images were then color corrected and approved in computer format by an oral pathologist. Advanced authoring that used Authorware Professional 2.0 allowed rapid prototyping, rapid debugging, near push-button conversion from Mac to Windows and utilized image libraries that enabled both Macintosh and Windows applications to fit onto a single CD-ROM disc.

A database was designed to enable the retrieval of the images by its diagnosis as well as by characteristics of the lesion such as its appearance and location. The Atlas thereby provides a level of flexibility not available in a textbook or where images are accessed using a bar-code reader. In this Atlas, the user may select from a list of attributes to retrieve a customized selection of images (relevant to an academic interest or to a particular patient's condition). For example, in the case where a diagnosis is not known, a user may wish to view all lesions commonly found in a certain location of the mouth or may want to view lesions of a particular description.

In addition to the diagnosis and descriptors of the lesion, each Atlas image is accompanied by a brief description of the disease, a synopsis of treatment, its clinical manifestations, and its etiology. In addition, each of the images will have an accompanying list of references so that users can be assured of the timeliness and relevance of the supporting information.

In its preparation, the descriptive vocabulary and preliminary definitions were prepared and submitted to domain experts for review and revision. The revised list of descriptors and definitions were pilot tested and compared with the most recent UMLS Metathesaurus and SNOMED to ensure that the preferred choices of terms were in the list. At the conclusion of this step the descriptor and definition lists were finalized and the final assignment of specific descriptors to each of the 250 images were made.

To maximize the speed of the data retrieval, C programming in the form of XCMDs and DLLs were added to actually perform the data searches. The Atlas was also designed so that items like references, bibliographies and clinical treatments could be updated easily with floppy discs. The Atlas application can be copied to the hard drive and be updated by a floppy because of its relatively small size (~6Mb). The image libraries (~250Mb) reside on the CD-ROM and are retrieved by the application as needed.

The Atlas is the first of two products. In development, is a computer-based training program. This program, using the Atlas images, will provide tutorials and case simulations of 21 distinct clinical entities manifested as oral manifestation of HIV.

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